Notes on the Psychides.

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In the July-August number of this magazine (pp. 97-99) I have recorded observations, which I had been making, as to the continued survival of some Psychid larvae, without food, for what appears to me to be an unusually long period.

The larval cases had been sent to me by Dr. P. A. Buxton, from Palestine, where he had collected them from about April to July, 1923. They had, when I wrote the note, remained obstinately within their cases, neither feeding, nor exhibiting a desire to feed.

I stated that on March 25th (1924) I had opened those cases, which when I last investigated their contents contained living larvae, and that I had found four of these still alive.

I have to-day (November 20th, 1924) again opened these cases, and find that two larvae still survive, but naturally more emaciated than when I saw them last. The other cases show that their inhabitants had actually succeeded in pupating. I found that one of these pupae had completely dried up, but the other contained a fully formed female, still flaccid, and therefore quite recently alive. The pupa shell is delicate, pale in colour, distinctly segmented, and was not protruded from the case. The abundance of "fluff" within the pupal shell shews that the insect had struggled to release herself, but there were no ova. These cases, which have certainly been cut open three or four times previously, have been neatly, and completely repaired, so perfectly that I find it impossible to discover where the openings had been made.

I need scarcely repeat that during this long period, of perhaps as much as 20 months, these larvae have never (so far as I have perceived) opened their cases, and that they have certainly eaten nothing. The surviving larvae still retain sufficient vitality to jerk their cases as they lie on the table before me, and are probably already at work repairing the damage which I have done with my scissors.

I am not going to make a guess at the identity of these insects, for I believe that I am right in thinking there may still be large numbers of Psychides, large and small, existing in the Palaearctic Region, which are practically unknown and unnamed. This is not to be taken as a retraction of my previously expressed opinion, that some Psychides have probably been very largely overnamed.

Judging by the cases alone, there may be five or six species in Dr. Buxton's collection, but it does not appear to me to be very profitable to name, or attempt to name, Psychides, from their cases. It may well be that the material of which the cases are fabricated depends upon the supply to hand, and climatic conditions may require differences in structure, and therefore in the appearance of the case. I have also found it impossible to make certain about the identification of cases sent to me, with the species to which they are credited.

Until the study of these species has been taken in hand seriously, doubts and mistakes in identification are unavoidable.

I feel very certain, after my disappointing experiences, that this will have to be carried out by resident investigators. There are evidently conditions, perhaps largely of temperature, humidity, or special food requirements, which would seem to prevent the rearing of these insects away from their particular habitations, and that unless

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at the time of collection they be full grown, it would appear to be a hopeless task to attempt to carry them through.

Yet another difficulty arises from their habit of retiring into their cases, and remaining within for an indefinite period, whether for hibernation, aestivation, or what not, but which probably reflects their habit when at home. This may well be the cause, when the habitat is a desert, mountain, torrid or frigid district, or, where there are regular alternations of wet and dry seasons. It will therefore not be safe to conclude that because a case is closed, the contained larva is necessarily full fed.

There are amongst the larger Psychides at least two forms of pupa. Probably both sexes of a species are much the same in facies. Without plenty of identified material, it is not possible to do more than infer this to be the fact. The male pupal shell being generally left projecting from the larval case at emergence, will serve as a sort of guide to the structure of that of the female.

The pupa shells of the Palestine specimens immediately under observation are somewhat delicate in structure, pale in colour, and more or less slender. So far as Psychid pupae conform to the general rule for other lepidoptera, they are what I may perhaps call pupa-like. We have so few of the large species in Britain, that it is not easy to make a comparison, but perhaps *Acanthopsyche atra*, and *Pachythelia villosella* conform to this pattern, by reason of their delicate structure, and obvious segmentation.

The only specimens of this form, which I have been able to study alive, are some of a number collected by Mr. F. M. Jones in deserts in Texas, and Arizona, in 1923, and left in my custody during his visit to the Continent this summer. From two of these females emerged, dropping from the larva cases, and leaving the pupa shells entirely within the larval case. I found the pale yellow females* upon the bottom of their cage, but careful examination was necessary in order to discover from which case each had come. This emergence may be, as has been observed in other Psychides, the usual habit after oviposition, or failure to attract a mate. I did not investigate to discover whether any ova had been laid. One of these cases contained a living larva, which at times came out of its case, and ate sparingly of foliage, roots and fruit.

The other form of pupa, so far as the material at my disposal serves to show, is hard, dark, and tipped with dull red at either extremity, the details of imaginal structure very much obscured by rugosity. I have found this form chiefly in the genus *Psyche*, but it is certainly not confined thereto. I have these hard dark pupae sent to me as those of *Psyche viciella*, *P. stettinensis*, *P. viadrina*, *P. constancella*, *P. turatii*, and *Sterrhopteryx standfussi*. To these Tutt (who gives

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* I ought to mention that when one of these American females was placed for observation upon the table before the window, she seemed to be able to discern the light, and helpless though she appeared to be, she wriggled towards it. I watched this effort for some time, and satisfied myself not only as to her power of motion, but also that she possessed the sense of sight, though it may be to a very limited extent.

precise details of the structure)* adds *S. hirsutella*, and I find that Dr. Strand (Seitz *Macrolepidoptera of the World*, Vol. II.), also makes the same statement as regards the female pupae of *Arctus bruandi*, *A. graslinella* and *A. calberlae*. But mention of the female pupae of the Psychides is very meagre, so far as I am able to discover. The genera mentioned all belong to the Psychinae, div. Psychidi of Tutt's work, of which we have but one representative in Britain, *Sterrhopteryx hirsutella*.

It is, thanks to Conte E. Turati, of Milan, that I am indebted for the opportunity of studying these pupae, he having sent me a very generous supply of living larvae of *Psyche turatii*, collected from marshes. From these I bred a number of male imagines. Here also the female pupal shell is not protruded from the case, and further there is no emergence of the female herself. I had not before this specially interested myself in these pupae, but having now a sufficient supply, I thought it advisable to examine the Italian specimens. Suprised that I had not reared a single female, I investigated some of the cases which appered to have produced nothing. On opening these I found my previously well known hard, dark, object with red ends, within which was the very delicate almost colourless female, which had not emerged from the pupal shell, although allowed to die undisturbed.

I am therefore quite assured that these females do not leave their pupal shells.

I should have expected that these females, which thus remain within the pupal shell, to belong to the males which have extensile bodies, and long segmental rods, but the genera have only short rods, and further they possess no anterior tibial spur. This information is however explained by the fact that all the cases of the species named are short.

Corrigenda.—I have not felt it necessary to refer to, or correct, the few errors which have crept into my previous papers upon the Psychides, as they have been so obvious that they could not mislead.

I cannot however avoid acknowledging a very careless slip of my own, which appeared in my last instalment. I there substituted my own Christian name for that of M. Constantin Dumont, of Paris, to whom I tender my sincere apologies.

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* Tutt p. 428, quotes Dr. Chapman's description of the pupa of this female, pupa. "The female pupa has the head and thoracic segments, and half of the 1st abdominal segment, of the usual pupal brown colour, the 8th, 9th, 10th abdominal segments also, the intermediate position black; certain chitinous waves look like labrum, labium, etc., but these and the leg covers, are very indefinite, and reduced to mere chitinous irregularities of surface; the wings are marked by similar but more distinct waved lines laterally; the scars of the prolegs are very marked, being great hollows with raised margins, etc."

Grimaldi, the Clown, an Entomologist.

(1779—1837).

A few weeks ago I came across a little known, and probably almost forgotten work, *Memoirs of Joseph Grimaldi*, edited by "Boz," 1878. Grimaldi was a famous clown during the last decade of the 18th century